		(Saathi)
	Date/ Heaps.	
¥	at some and the some of the some one	lie - Ill
14	have a data structure which is a	with anything, we
1	have a data struiture which is a	alled Heap to
- i-	Charle,	en ly c
	Heap is a complète Binary Trèce.	4.3.5-1
,	Types of Heap: -	A read the control of
745	Heap in like a queue but with	centain priority
	Heap is like a queue but with. Two types of Heap are there.	U
(ما	Max Heap> Promonity is given element. It is	
	order of elements	<u> </u>
	order of elements ex .[2,13,5,1,15] -	2 somple element.
E.T.	Array implementation. of Max.	heap.
	U	
	14 1 Top 10 -> 15 13 5 2 15 -> 13	offom - and
364 5-	Heap go & Complete Binary	Free ?
	" where it will the make me at reason	10 - Na N 40
2482 000 1	I to sent of som in (15) would be	Fill the left
	(5) in	element first.
		Then trigo
0		deletion
inser	ion in Max Heap)	Tolwop Carriroot, apollo
	parent = 1/2 finder.	delete last
	(orrsporent] > arrsindex]) retur	m; left < size &
· · · · · · · · · · · ·	le é suplant [partindex]);	arreijearcht
	Prodex = porent)	Las was to be to b
	Prodex = porent; else il l'right < 8ize 22 arr [i] Karr [ri] swapl arr[i], arr[right]); 1=0	Page No.
	O'mab (and)	ALCOHOLD STATE OF THE STATE OF

(Saathi) Date ___ / __ / ___ Min Heap. - Priority is given to the smaller element. It is vonted in excending order of elements. Cy + [2,13,5,1,15]

Array implementation of Heap. Top, -> 1 2 5 13 15 -> Bottom. Heap and d'omplete Binary Tree Light

Minimis of the property of the good voice (1)

12) (5) the world is released to the property of the prop 19 Top-> milti returns. the Hopmost relement of the heap.

if empty() then throw an error To(>0(1) 2 Push - It inserts on element into the heap. The size increases by one. To Co -> Ollogn)
in number of elements inside the heap-already.



As. I already roid Heaps sare complète Binary Tree feler to Binary Tree section for more about CBT.

- # Conversion of Array into Heap. et us consider the given elements to be in a form
 - 1. The first element is taken as the most.

 9 iLet the relement at index in the array be
 - Then, the left child of that most will be the element at index '2xi+1'
 - at index, 2xi+2).
 - 5. In this way only, the whole complete binony tree is created; with the sund with the second tree of the se
- 6. Index of array considered to be start from 'O'
 - if there is '1' indexed array. then
 - leftinta 2 tring, right, -> 12 tit to
- Declaration of Heap + & C+P BTLZ.
- For Max Heap -> priority-queue < int > max-pq;
- For Min Heap priority-queue < int, veitor cint, greate cints

priority-queue (int, vectorist), greatereint) min-19)



Page No.

****	Date / /
en a complex	Application + 1 k' based question
114 2 - 1 1 1 1 1 1	지수는 스타일 환경을 가득하다고 있다. 지금 수 없는 사람들이 가득하는 것이 되었다. 그는 그는 그는 그를 하는 것이 되었다. 그는 그는 그를 하는 것이 되었다.
(1)	Whenever we are asked to find the 16th smallestor largest element in the arrivary we can use heaps
	largest clement in the arrivery we can use heaps
	· field with Ohn marketing
mint the	One methodicis to sort the array & return.
	are [k-1] element To C > o (nlogn)
2	By using heap. we can insent the element in
	the heap one by one . An acons on the rize of
Z-	heap become greater than le we pop the element
	To Cod 14 ((In logic) at the blads flot add mater of
many to 3	for kth smallest a element we use max heab-
ધ	Por pet largest n. 12 the max heap
0	Priority Based question & Losomer priority tenked in
(2	from ty Based question - bomes promity linked in
	alter parmar same about the
	ofter persporming some operations often each
2	leservings : the menemen element number query wise
(3)	ANTH TO be to down to sold one of the sold of
3	Huffman Coding + Heaps are usually used in Huffman coding of while
- 69 (To com	encodina l'adacation de dans l'action de la description de la contraction de la description de la desc
is there .	encoding & décoding the l'encogpted atoning
4	
1 10	- ille (21 - spot ore Abdorotan 129 Denous Abouton